

La Salle College



Catalogue 1917—1918

LA SALLE COLLEGE

AND

**LA SALLE COLLEGE
HIGH SCHOOL**

CONDUCTED BY THE

BROTHERS OF THE CHRISTIAN SCHOOLS

1917—1918



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OFFICERS OF THE COLLEGE

REV. BROTHER D. EDWARD, F. S. C., President.

REV. BROTHER RICHARD, F. S. C., Vice-President.

REV. BROTHER ELIPHUS, F. S. C., Treasurer and Registrar.

REV. BROTHER ALOYSIUS, F. S. C., Secretary.

BOARD OF MANAGERS

MOST REV. EDMOND F. PRENDERGAST, D. D., Honorary President.

REV. WILLIAM P. MASTERSON, P. R.

GEN. EDWARD DE V. MORRELL.

JAMES J. RYAN, G. C. S. G.

REV. BROTHER A. PHILIP, F. S. C.

REV. BROTHER DENIS EDWARD, F. S. C.

REV. BROTHER ISIDORE, F. S. C.

REV. BROTHER ELIGIUS, F. S. C.

REV. BROTHER ALOYSIUS, F. S. C., Secretary.

COLLEGE CALENDAR

1917

Sept. 5, 6, 7, Registration.

Entrance and Condition Examinations.

Sept. 10, Monday, 9.00 A. M., College year begins.

Oct. 10, 11, 12, Retreat.

Oct. 12, Columbus Day—Holiday.

Nov. 1, Thursday, All Saints—Holiday.

Nov. 8, Thursday, Quarterly Examinations, High School.

Nov. 29, Thanksgiving Recess.

Dec. 21, Friday, 5.00 P. M., Christmas Recess begins.

1918

Jan. 3, Thursday, Studies resumed.

Jan. 28-31, Examinations.

Feb. 1, Friday, Second Term begins.

Feb. 22, Friday, Washington's Birthday—Holiday.

Mar. 27, Wednesday, 6.00 P. M., Easter vacation begins.

April 2, Tuesday, 9.00 A. M., Easter vacation ends.

April 11, Wednesday, Quarterly Examinations, High School

May 9, Thursday, Ascension—Holiday.

May 15, Wednesday, St. La Salle—Holiday.

May 30, Thursday, Memorial Day—Holiday.

June 3, Examinations.

June 10, Commencement Week.

ORGANIZATION

On March 20, 1863, the late Most Rev. James Frederick Wood, D.D., then Bishop of Philadelphia, in conjunction with a committee consisting of Christian Brothers, Reverend Clergy and laymen, obtained from the State of Pennsylvania a charter incorporating La Salle College in Philadelphia.

Their aim was to supply within the limits of Philadelphia the want of a College for higher Catholic education.

The College offers courses in Arts, Civil Engineering, Chemical Engineering and Chemistry. These courses lead to the degrees of Bachelor of Arts and Bachelor of Science in Civil Engineering, Chemical Engineering and Chemistry.

Pre-Medical.—The College offers the students preparing for the study of medicine, a two years' course in Physics, Chemistry, Biology, German, and opportunity for election of other College Subjects.

Besides the College proper, there is a High School department. This department offers two courses—a modern language course and a business course. The former, which corresponds to the ordinary four-year high school course, prepares directly for college entrance; the latter offers two years of commercial work.

In both the Collegiate and High School departments, every attention is bestowed on the moral and religious training of the student. Christian Doctrine is taught in all the classes. Regular attention to religious duties is required of all students.

FEES

| | |
|---|---------|
| Collegiate Department, per quarter | \$25.00 |
| Commercial Department, " | 25.00 |
| High School Department, " | 20.00 |
| Preparatory Department, " | 20.00 |
| Lunch at College, " | 12.50 |
| Use of Typewriter, per year | 5.00 |
| Gymnasium, " | 5.00 |
| Graduation Fee | 10.00 |
| Certificate Fee | 5.00 |
| Condition Examination Fee | 2.00 |
| Laboratory Fee, for any one course | 10.00 |
| Laboratory Fee, for any one course, High School Department | 5.00 |
| Student Activities | 2.00 |

Repair of apparatus at expense of student injuring same.

Books and stationery are procured at the College at current prices.

The tuition bills are invariably payable quarterly in advance.

Students whose financial accounts are in arrears will not be retained in the College.

No deduction is made for a student who withdraws during the quarter except for prolonged sickness.

ADMISSION

A student who wishes to enter La Salle College as a candidate for a degree must ordinarily pass examination for admission, either that of the College, or that of the College Entrance Examination Board.

Students who have completed creditably the work of at least one year at other colleges or scientific schools may be admitted, on probation, without examination to the standing for which their previous training seems to qualify them.

The applicant should furnish: (1) Official statement of his rank or grade in his various college studies; (2) Letters or other evidence, showing the opinion his instructors have formed of his character and scholarship; (3) A letter of honorable dismissal from the college whence he comes.

Each candidate for admission must present himself for examination in the subjects prescribed for the High School Course on pages 54 to 58.

Clear and idiomatic English is expected in all examination papers and note-books written by candidates for admission.

However accurate in subject-matter, no paper will be considered satisfactory if seriously defective in punctuation, spelling, or other essentials of good usage.

A candidate who is examined in any study in which a laboratory examination is held will hand in his laboratory

note-book at the hour of the *laboratory examination*. These laboratory note-books will be kept for one year in the College office, subject to the order of the owners.

ENTRANCE REQUIREMENTS

These requirements conform to the standards prescribed by the College Entrance Examination Board.

1. ENGLISH.—Candidates for admission to the Freshman class must pass a written examination in English; and no candidate will be admitted whose spelling, diction, or paragraphing is notably defective.

Reading.—A certain number of books are set for reading. The candidate will be required to give evidence of a general knowledge of the subject-matter, and to answer simple questions on the lives of the authors. The form of examination will usually be the writing of a paragraph or two on each of several topics, to be chosen by the candidate from a number set before him in the examination paper. These topics, which are assigned to test the candidate's power of clear and accurate expression, will call for only a general knowledge of the substance of the books. In place of a part or the whole of this test, the candidate may present an exercise book, properly certified by his teacher, containing compositions or other written work done in connection with the reading of the books. As a preparation for this part of the entrance requirements, it is important that the candidate be well versed in the fundamental principles of rhetoric.

The books selected for reading are:

Shakespeare, Henry V. and Julius Cæsar; Franklin, Autobiography; Goldsmith, The Deserted Village; Hawthorne, The House of the Seven Gables; Dickens, A Tale of Two Cities; Irving, The Sketch Book; De Quincey, Joan of Arc and The English Mail Coach; Poe, Poems; Macaulay, Lays of Ancient Rome; Longfellow, The Courtship of Miles Standish, or Browning, The Pied Piper and Other Poems.

Study and Practice.—This part of the examination presupposes the thorough study of each of the works named below. The examination will be upon the form, structure, and subject-matter. In addition, the candidate may be required to answer questions involving the essentials

of English grammar, and on the leading facts in those periods of English history to which the prescribed books belong.

The books set for this part of the examination are:

Shakespeare, Macbeth; Milton, Lycidas, Comus, L'Allegro, and Il Penseroso; Burke, Speech on Conciliation with America, or Washington's Farewell Address and Webster's First Bunker Hill Oration; Macaulay, Life of Johnson, or Carlyle's Essay on Burns.

2. HISTORY.—History of the United States and Civil Government, and (a) History of England, or (b) History of France, or (c) History of Greece and Rome.

3. ALGEBRA.—Wentworth's School Algebra or equivalent.

4. GEOMETRY.—Wentworth's Plane and Solid Geometry or equivalent.

5. TRIGONOMETRY.—Wentworth's Plane Trigonometry.

6. FRENCH.—Grammar, sight translation. Composition based on the following books:

De Maistre, Voyage autour de ma Chambre; Mairet, La Tâche du Petit Pierre; Halévy, L'Abbé Constantine; Daudet, Le Siège de Berlin, and Merrimée, Colombia.

7. GERMAN.—Grammar, sight translation. Composition based on the following books:

Hillern, Höher als die Kirehe; Hauff, Das Kalte Herz; Freytag, Die Journalisten; Storm, Immensee.

8. CHEMISTRY.—A course of at least fifty experiments made by the candidate, with note-book certified by the teacher.

9. PHYSICS.—Knowledge of the general principles of Physics and their application. Each candidate must present a note-book containing a description of at least forty experiments which he has performed. Note-book to be certified by the teacher.

The following will be accepted in place of French and German:

Latin.—Grammar, Bennett or equivalent, including prosody; Cæsar, Gallic War, Books I-IV; Cicero, six orations; reading at sight of a short passage of easy Latin prose; Aeneid, Books I-VI; Latin prose composition.

Greek.—Grammar, Goodwin's, or equivalent, including prosody; Xenophon, Anabasis, Books I-III; Homer, Iliad, Books I-III; Greek prose composition, Jones, twenty exercises, or equivalent.

GENERAL REGULATIONS

All students should be present at 8.45 A. M.

No interruption is permitted in class studies except for urgent reasons.

No one may leave the class before the hour of dismissal without presenting a valid excuse in writing from his parent or guardian. This permission is given by the President on the approval of the teacher in charge of the class.

Lessons omitted on account of absence are regarded as failures unless made up outside of school hours.

No student is allowed to discontinue any subject obligatory in the course he is pursuing.

Absences.—A student who is absent in a course for any cause for a number of hours in a given term that exceeds twice the number of hours per week in which the course is given, shall be marked as having failed in that subject, and immediately reported to the President's Office. No excuse of any sort will exempt the student from the application of this rule. With the consent of the Professor in charge of the subject, he may continue in class. If he so continues, the final examination will be counted as a re-examination. Unless for exceptional reasons and upon the recommendation of the department concerned, he shall not receive higher than a passing mark.

Each department may penalize absences by the assignment of grades in any manner that it may see fit.

Absences will be counted against the student from the beginning of the course, no matter at what date he may enter the course.

A student who is late for a lecture, recitation or laboratory period in any course will be marked with a "cut" for that period. The rules governing such "cuts" are identical with those governing absences.

A student who reports late for a lecture, recitation or laboratory period in any course must assist at the remainder of the period.

Absence from an examination, unless excused by the Faculty, is considered a failure.

The examination fee of two dollars must be paid before a re-examination.

The President of the College reserves the right to refuse all privileges, such as leaves of absence, to students whose class records are not up to the required standard.

All damage to the property of the College must be repaired at the expense of the student who caused such damage.

Examinations.—Examinations for admission are held at the College on the two days preceding the opening of each term.

The regular College term examinations are held during the last week of January and the second week of June.

In case of illness or for some other equally grave cause, a student may have his examination postponed.

For students who fail in the regular examinations, condition examinations are held at the College on the two days preceding the opening of the first term, and also on the first day of the Christmas and Easter recesses.

Rating.—The final standing of each student in any subject is determined by his examination results and his class-marks in that subject. Seventy per cent. (in Civil Engineering subjects, sixty per cent.) constitutes a passing grade in each subject. A statement of the standing of the student in each subject is sent to the parent or guardian at the close of each term.

Promotion.—No student will be allowed to take up Freshman work whose conditions on entrance exceed one and one-half units.* All entrance conditions must be removed before the beginning of Sophomore year.

No student will be allowed to take up Sophomore work whose failures in Freshman work exceed one and one-half units. No student will be allowed to take up Junior work whose failures exceed one unit in the work of the two previous years. No student will be allowed to take up Senior work who has any conditions.

Studies.—The studies of the courses in civil engineering, chemical engineering and chemistry are prescribed throughout. In the Arts course, the Freshman and Sophomore work is prescribed, and electives are offered in the Junior and Senior years. No elective course will be given unless there is a sufficient number of applicants.

Degrees.—Every candidate for a degree is required to present a typewritten thesis on a subject connected with his course. The subject selected must be submitted for

* A unit is five recitations a week for one year in any subject. Two hours of laboratory work or two hours of drawing are equivalent to one hour's recitation.

approval to the professor of the department to which it belongs, on or before February 1. Such help and guidance may be offered the candidate as the professor may judge right, and the completed thesis shall be handed in for approval on or before May 30.

Theses shall contain not less than two thousand words, and must be typewritten. Science theses must be accompanied by the necessary drawings and illustrations. All approved theses become the property of the College and are placed in charge of the Librarian.

If a student fail to present his thesis, or if the thesis be rejected, he shall not be recommended for his degree.

At the discretion of the Faculty, a certificate of proficiency may be given to a student who has followed, under the direction of the Faculty, a special course of one or more subjects, and who gives evidence of satisfactory proficiency.

Department of Arts

THE COURSE IN ARTS

FRESHMAN CLASS

| | Course Number | HOURS | |
|---------------------------|------------------|---------------|----------------|
| | | First Term | Second Term |
| FRENCH | 120, 121 | 4 | 4 |
| GERMAN | 130, 131 | 4 | 4 |
| ENGLISH | 102, 105, 106 | 4 | 4 |
| HISTORY | 140, 141 | 2 | 2 |
| MATHEMATICS | 163, 161 | 3 | 5 |
| PHYSICS | 180, 181 | 2 | 2 |
| PHYSICAL LABORATORY | 182 | 2 | 2 |
| CHEMISTRY | 10 | 2 | 2 |
| CHEMICAL LABORATORY | 11 | 2 | 2 |
| ELOCUTION | 170 | 1 | 1 |
| CHRISTIAN DOCTRINE | 220 | 2 | 2 |
| PHYSICAL CULTURE | | 1 | 1 |

SOPHOMORE CLASS

| | Course Number | HOURS | |
|---------------------------|------------------|---------------|----------------|
| | | First Term | Second Term |
| FRENCH | 120 | 4 | 4 |
| GERMAN | 130, 132 | 4 | 4 |
| ENGLISH | 104, 106 | 5 | 5 |
| HISTORY | 143 | 3 | 3 |
| MECHANICS | 180 | 3 | 3 |
| GEOLOGY | 125 | 2 | 2 |
| ELOCUTION | 171 | 1 | 1 |
| CHRISTIAN DOCTRINE | 221 | 2 | 2 |
| CHEMISTRY | 12 | 2 | 2 |
| CHEMICAL LABORATORY | 13 | 3 | 3 |
| PHYSICAL CULTURE | | 1 | 1 |

JUNIOR CLASS

| | Course Number | HOURS | |
|-------------------------------|------------------|---------------|----------------|
| | | First Term | Second Term |
| FRENCH | 123, 123 | 4 | 4 |
| GERMAN | 133, 133 | 4 | 4 |
| ENGLISH | 107, 108, 109 | 5 | 5 |
| PHILOSOPHY | 200, 201, 205 | 4 | 4 |
| PHYSICS | 183, 183 | 2 | 2 |
| PHYSICAL LABORATORY | 184, 184 | 3 | 3 |
| ORATORY | 172, 172 | 1 | 1 |
| CHRISTIAN DOCTRINE | 222, 222 | 2 | 2 |
| ASTRONOMY | 73, 74 | 2 | 1 |

ELECTIVES

| | | | |
|---|----------|---|---|
| BIOLOGY | 1, 2 | 4 | 4 |
| AMERICAN POLITICAL INSTITUTIONS | 148 | | |
| EUROPEAN CONSTITUTIONS | 147 | | 1 |
| CHURCH HISTORY | 152, 152 | 1 | 1 |
| CHEMISTRY | 14, 15 | 5 | 5 |
| PEDAGOGY | 173, 177 | 3 | 3 |

SENIOR CLASS

| | Course Number | HOURS | |
|--|------------------|---------------|----------------|
| | | First Term | Second Term |
| ENGLISH | 111, 112 | 4 | 4 |
| PHILOSOPHY OF HISTORY | 151, 151 | 2 | 2 |
| ONTOLOGY AND COSMIC PHILOSOPHY | 203, 203 | 4 | |
| PSYCHOLOGY | 205 | | 4 |
| HISTORY OF PHILOSOPHY | 211, 211 | 2 | 2 |
| ECONOMICS | 90, 90 | 2 | 2 |
| ORATORY | 173, 173 | 1 | 1 |
| NATURAL THEOLOGY | 207, | 2 | |
| ETHICS | 208, 209 | | 2 |
| FRENCH | 122, 122 | 4 | 4 |
| GERMAN | 135, 135 | 4 | 3 |

ELECTIVES

| | Course Number | HOURS | |
|---------------------------------|------------------|---------------|----------------|
| | | First Term | Second Term |
| BIOLOGY | 3, 4 | 2 | 2 |
| PRINCIPLES OF GOVERNMENT | 91 | 3 | |
| SOCIOLOGY | 93 | | 3 |
| PUBLIC FINANCE | 92 | 2 | |
| REPRESENTATIVE GOVERNMENT | 149 | | 2 |
| AMERICAN HISTORY | 150, 150 | 2 | 2 |
| CHEMISTRY | 16, 17 | 5 | 5 |
| PEDAGOGY | 176, 178 | 3 | 3 |
| PSYCHOLOGY OF EDUCATION | 206 | | 2 |

Department of Engineering

THE COURSE IN CIVIL ENGINEERING

La Salle College offers a full professional course of instruction, leading to the Degree of Bachelor of Science in Civil Engineering.

While no period is fixed for the completion of the work, the average student can, with diligence, accomplish this within the assigned period of four years.

The course in Civil Engineering is designed to meet, as thoroughly as practicable, the demands of modern engineering practice.

The studies are sufficiently comprehensive to ensure the graduate that broad technical training essential to the successful prosecution of his subsequent professional work.

The subjects are so arranged that starting at the end of the Freshman year, the student may secure practical experience at an adequate return, during the vacation periods from June to October.

The latest editions of text-books covering modern practice in Civil Engineering, supplemented by lectures and notes, are used as a basis of instruction.

The equipment of surveying instruments is the best obtainable: Buff and Buff transits, levels, leveling rods, stadia rods, self-reading steel tapes, etc.

No surveys are attempted until the student is familiar with the adjustment and use of the various equipment.

Visits of inspection are made, from time to time, to engineering manufacturing plants and as often as possi-

ble the students are required to inspect actual engineering work under construction; especially, where the inspection has a direct bearing on class-room work.

Written reports, based on personal inquiries and observation, are required of a number of these visits, and the reports are examined, not only as to form and subject matter, but as to the orthography, language used and grammatical construction.

Special attention is given to debating and to public speaking and to the logical development of oral argument in the presentation of engineering subjects before public committees.

Each student in Civil Engineering is required to make a cash deposit to cover loss of books, keys, etc., breakage and damage to College instruments and property, to be used where charges for such damage can not be assessed against any one or any known number of individual students. Any balance in this deposit is returned, pro rata, upon graduation or withdrawal.

The Degree of Civil Engineer is contingent upon the presentation of a thesis satisfactory to the Faculty and may be secured only after at least three years practical work in some engineering, technical or manufacturing work strictly allied to the prescribed Course.

Department of Civil Engineering

THE COURSE IN CIVIL ENGINEERING

FRESHMAN CLASS

| | Course Number | HOURS | |
|---------------------------------|------------------|---------------|----------------|
| | | First Term | Second Term |
| ELOCUTION | 170 | 1 | 1 |
| CHRISTIAN DOCTRINE | 220 | 2 | 2 |
| ENGLISH | 102, 105, 106 | 2 | 2 |
| GERMAN (FRENCH, elective) | 130, 131 (120) | 2 | 2 |
| CHEMISTRY | 16 | 2 | 2 |
| CHEMICAL LABORATORY | 11 | 2 | 2 |
| PHYSICS | 180, 181 | 2 | 2 |
| PHYSICAL LABORATORY | 182 | 2 | 2 |
| TRIGONOMETRY (LOGARITHMS) | 160 | 3 | |
| ALGEBRA (SLIDE RULE) | 163 | | 3 |
| FREEHAND LETTERING | 30 | 2 | |
| PROJECTION SKETCHING | 31 | 1 | |
| MECHANICAL DRAWING | 32 | 3 | |
| DESCRIPTIVE GEOMETRY | 33 | 2 | 2 |
| PLANE SURVEYING | 35 | 3 | 3 |
| TOPOGRAPHICAL DRAWING | 44 | | 2 |
| STRUCTURAL DRAWING | 45 | | 4 |

SOPHOMORE CLASS

| | Course Number | HOURS | |
|---------------------------------|------------------|---------------|----------------|
| | | First Term | Second Term |
| ELOCUTION | 171 | 1 | 1 |
| CHRISTIAN DOCTRINE | 221 | 2 | 2 |
| ENGLISH | 104, 106 | 2 | 2 |
| GERMAN (FRENCH, elective) | 134 (121) | 2 | 2 |
| CHEMISTRY | 12 | 2 | 2 |
| CHEMICAL LABORATORY | 13 | 2 | 2 |
| GEOLOGY | 125 | 1 | 1 |

| | Course Number | HOURS | |
|---------------------------------|---------------|-------------------------|-------------|
| | | First Term | Second Term |
| ANALYTICAL GEOMETRY | 161, 162 | 5 | |
| CALCULUS | 164 | | 5 |
| ANALYTIC MECHANICS | 185 | | 2 |
| DESCRIPTIVE GEOMETRY | 34 | 2 | 2 |
| RAILROAD SURVEYING | 36 | 3 | 3 |
| MATERIALS OF CONSTRUCTION | 46 | | 2 |
| MECHANICS OF MATERIALS | 48 | 2 | 2 |
| MACHINE SKETCHING | 50 | | 2 |
| GRAPHIC STATICS | 51 | 1 | 1 |
| STEREOTOMY | 53 | | 2 |
| SUMMER SURVEY | 37 | Three to four weeks. | |

JUNIOR CLASS

| | Course Number | HOURS | |
|----------------------------------|---------------|------------|-------------|
| | | First Term | Second Term |
| ORATORY | 172 | 1 | 1 |
| CHRISTIAN DOCTRINE | 222 | 2 | 2 |
| PHILOSOPHY | 201, 205 | 2 | 2 |
| ENGLISH | 107, 108, 109 | 1 | 1 |
| MINERALOGY | 126 | 1 | |
| PHYSICS | 183 | 2 | 2 |
| PHYSICAL LABORATORY | 184 | 3 | 3 |
| ANALYTIC MECHANICS | 185 | 2 | |
| MAP PLOTTING | 38 | 2 | |
| RAILWAY PRACTICE | 39 | 2 | |
| RAILWAY ENGINEERING | 40 | 2 | |
| MATERIALS OF CONSTRUCTION | 47 | 2 | |
| MECHANICS OF MATERIALS | 49 | 2 | 2 |
| GRAPHIC STATICS | 52 | | 1 |
| HYDRAULICS | 56 | 2 | 2 |
| WATER SUPPLY AND IRRIGATION | 58 | | 2 |
| SEWERS AND SEWAGE DISPOSAL | 59 | | 2 |
| BRIDGES AND BUILDINGS | 61 | | 4 |

| | Course Number | First Term | Second Term | HOURS |
|---|------------------|---------------|----------------|-------|
| GIRDER DESIGN | 63 | | | 2 |
| STEEL TESTING | 65 | 1 | 1 | |
| TIMBER STRUCTURES | 69 | | 1 | |
| TUNNELING AND EXCAVATION | 70 | | | 2 |
| MASONRY CONSTRUCTION AND FOUN- DATIONS | 71 | | 2 | |
| ASTRONOMY (THEORY) | 73 | | | 2 |

SENIOR CLASS

| | Course Number | First Term | Second Term | HOURS |
|--|------------------|---------------|----------------|-------|
| DEBATING AND ARGUMENT | 173 | 1 | 1 | |
| NATURAL THEOLOGY | 207 | | 2 | |
| ETHICS | 208, 209 | | | 2 |
| ENGLISH | 111, 112 | 1 | 1 | |
| METALLURGY | 25 | 1 | | |
| CONTRACTS AND SPECIFICATIONS | | | | 2 |
| BUSINESS LAW | 2 | | | 2 |
| RAILWAY ECONOMICS | 41 | 2 | | |
| RAILWAY DESIGN | 42 | | | 2 |
| GEODESY | 43 | 2 | 2 | |
| HYDRAULIC INSTALLATION | 57 | | | 4 |
| Roads and Pavements | 60 | 2 | | |
| BRIDGES AND BUILDINGS | 62 | | 4 | |
| TRUSS DESIGN | 64 | | | 3 |
| CEMENT TESTING | 66 | 2 | | |
| REINFORCED CONCRETE | 68 | 4 | 4 | |
| MASONRY DESIGN | 72 | 3 | | |
| ASTRONOMY | 74 | 2 | | |
| ENGINES AND BOILERS | 75 | 3 | | |
| REFRIGERATION | 76 | | | 3 |
| ELECTRICITY | 77 | 1 | 2 | |
| INSPECTION VISITS | 80 | 4 | | |
| THESIS | 81 | | | 6 |

DEPARTMENT OF CHEMISTRY

The increasing demand for chemists and chemical engineers today, has suggested the arranging of courses which will afford students preparation along these special lines. The Department of Chemistry, therefore, announces the establishment of complete courses in Chemistry and in Chemical Engineering which extend over a period of four years and lead to the Degrees of Bachelor of Science in Chemistry and Bachelor of Science in Chemical Engineering.

THE CHEMICAL COURSE

This course is arranged to fit young men to fill the position of chemist in the laboratories of chemical and manufacturing establishments such as sugar refineries, gas works, dye works, tanneries, cement plants, steel mills, etc. It also affords excellent preparation for teachers of chemistry, research chemists, and prospective medical students. Special attention is paid to analytical chemistry and ample time for practical work in the laboratory is afforded.

COURSE IN CHEMISTRY

FRESHMAN YEAR

| | Course Number | HOURS | |
|----------------------------|------------------|---------------|----------------|
| | | First Term | Second Term |
| GENERAL CHEMISTRY | 10, 11 | 12 | |
| QUALITATIVE ANALYSIS | 12, 13 | | 12 |
| STOICHIOMETRY | 18 | | 1 |
| TRIGONOMETRY | 160 | 3 | |
| ALGEBRA | 163 | | 3 |
| GERMAN OR FRENCH | 130 or 120 | 2 | 2 |
| ENGLISH COMPOSITION | 102 | 2 | |
| ENGLISH LITERATURE | 105 | | 2 |
| MECHANICAL DRAWING | 32 | 3 | |
| PHYSICS | 180, 181 | 2 | 2 |
| PHYSICAL LABORATORY | 182 | 2 | 2 |
| RELIGION | 220 | 2 | 2 |
| PHYSICAL EDUCATION | | 1 | 1 |

SOPHOMORE YEAR

| | Course Number | HOURS | |
|--------------------------------|------------------|---------------|----------------|
| | | First Term | Second Term |
| QUALITATIVE ANALYSIS | 12, 13 | 12 | |
| QUANTITATIVE ANALYSIS | 14, 15 | | 12 |
| ENGLISH COMPOSITION | 104 | 2 | |
| HISTORY OF AMERICAN LITERATURE | 106 | | 2 |
| ANALYTIC GEOMETRY | 161 | 3 | |
| CALCULUS | 164 | | 3 |
| FRENCH OR GERMAN | 121, 132 | 3 | 3 |
| GEOLOGY | 125 | 1 | 1 |
| RELIGION | 221 | 2 | 2 |
| PHYSICAL EDUCATION | | 1 | 1 |

JUNIOR YEAR

| | Course Number | HOURS | |
|---------------------------------|------------------|---------------|----------------|
| | | First Term | Second Term |
| QUANTITATIVE ANALYSIS | 14, 15 | 8 | |
| ORGANIC CHEMISTRY | 16, 17 | 5 | 5 |
| ADVANCED INORGANIC CHEMISTRY . | 19 | | 12 |
| ASSAYING | 20 | 4 | 4 |
| GERMAN OR FRENCH | 133 or 123 | 2 | 2 |
| MINERALOGY | 126 | 3 | 3 |
| ELECTRICITY AND MAGNETISM | 183 | 2 | 2 |
| PHYSICAL LABORATORY | 184 | 3 | 3 |
| RELIGION | 222 | 2 | 2 |
| PHYSICAL EDUCATION | | 1 | 1 |

SENIOR YEAR

| | Course Number | HOURS | |
|----------------------------|------------------|---------------|----------------|
| | | First Term | Second Term |
| ORGANIC CHEMISTRY | 16, 17 | 12 | 12 |
| INDUSTRIAL CHEMISTRY | 21 | 2 | 2 |
| INDUSTRIAL ANALYSIS | 22 | 6 | |
| PHYSICAL CHEMISTRY | 23 | 4 | 4 |
| ELECTRO CHEMISTRY | 24 | 1 | 1 |
| METALLURGY | 25 | 2 | |
| THESIS | | | 6 |
| RELIGION | 207, 208 | 2 | 2 |
| PHYSICAL EDUCATION | | 1 | 1 |

THE CHEMICAL ENGINEERING COURSE

This course, while giving a thorough training in Chemistry includes such engineering subjects as will prepare the student for the erection, equipment and operation of chemical plants or chemical and analytical departments of manufacturing establishments as for instance the research laboratories of soap factories, dye works, paper mills, mining and metallurgical plants, etc. While special attention is paid to chemistry, the students are well grounded in the underlying principles of engineering and required to do laboratory work that will give them practical experience necessary for the chemical engineer.

COURSE IN CHEMICAL ENGINEERING

FRESHMAN YEAR

| | Course Number | HOURS | |
|----------------------------|------------------|---------------|----------------|
| | | First Term | Second Term |
| GENERAL CHEMISTRY | 10, 11 | 12 | |
| QUALITATIVE ANALYSIS | 12, 13 | | 12 |
| TRIGONOMETRY | 160 | 3 | |
| ALGEBRA | 163 | | 3 |
| GERMAN OR FRENCH | 130 or 120 | 2 | 2 |
| ENGLISH COMPOSITION | 102 | 2 | |
| ENGLISH LITERATURE | 105 | | 2 |
| MECHANICAL DRAWING | 32 | 3 | |
| PHYSICS | 180, 181 | 2 | 2 |
| PHYSICAL LABORATORY | 182 | 2 | 2 |
| RELIGION | 220 | 2 | 2 |
| PHYSICAL EDUCATION | | 1 | 1 |

SOPHOMORE YEAR

| | Course Number | HOURS | |
|------------------------------|------------------|---------------|----------------|
| | | First Term | Second Term |
| QUALITATIVE ANALYSIS | 12, 13 | 12 | |
| QUANTITATIVE | 14, 15 | | 12 |
| MACHINE SKETCHING | 50 | 2 | |
| ENGLISH | 104, 106 | 2 | 2 |
| ANALYTIC GEOMETRY | 161 | 5 | |
| CALCULUS | 164 | | 5 |
| ANALYTIC MECHANICS | 185 | | 2 |
| FRENCH OR GERMAN | 121, 132 | 2 | 2 |
| MECHANICS OF MATERIALS | 48 | 2 | 2 |
| RELIGION | 221 | 2 | 2 |
| PHYSICAL EDUCATION | | 1 | 1 |

JUNIOR YEAR

| | Course Number | HOURS | |
|---|------------------|---------------|----------------|
| | | First Term | Second Term |
| QUANTITATIVE ANALYSIS | 14, 15 | 8 | |
| ORGANIC CHEMISTRY | 16, 17 | 5 | 5 |
| ADVANCED INORGANIC CHEMISTRY.. | 19 | | 12 |
| ASSAYING | 20 | 4 | 4 |
| GRAPHIC STATICS | 52 | 1 | 1 |
| HYDRAULICS | 56 | 2 | 2 |
| ELECTRICITY AND MAGNETISM | 183 | 2 | 2 |
| ELECTRICAL LABORATORY | 184 | 2 | 2 |
| ELEMENTS OF ELECTRICAL ENGI- NEERING | 186 | 2 | |
| MECHANICAL LABORATORY | 49 | 3 | |
| RELIGION | 222 | 2 | 2 |
| PHYSICAL EDUCATION | | 1 | 1 |

SENIOR YEAR

| | Course Number | HOURS | |
|------------------------------|------------------|---------------|----------------|
| | | First Term | Second Term |
| ORGANIC CHEMISTRY | 16, 17 | 8 | 8 |
| INDUSTRIAL CHEMISTRY | 21 | 2 | 2 |
| INDUSTRIAL ANALYSIS | 22 | 4 | |
| METALLURGY | 25 | | 2 |
| PHYSICAL CHEMISTRY | 23 | 4 | 4 |
| ELECTRO-CHEMISTRY | 24 | 1 | |
| APPLIED THERMODYNAMICS | 75, 76 | 3 | 3 |
| BUSINESS LAW | 2 | | 2 |
| RAILROAD ECONOMICS | 41 | 2 | |
| CEMENT TESTING | 66 | 2 | |
| THESIS | | | 6 |
| RELIGION | 207, 208 | 2 | 2 |
| PHYSICAL EDUCATION | | 1 | 1 |

PRE-MEDICAL COURSE

This course has been arranged to meet the requirements of the leading schools of medicine in this and other states. It is designed to follow a standard four-year high-school course and offers two years of college work, now quite generally required for admission to the medical course. Special attention is given to biology, including a course in medical botany, while the chemistry embraces not only general chemistry and qualitative analysis, but also quantitative analysis and organic chemistry, which last is of great importance to the medical student. The courses in medical botany, medical terminology and the history of medicine give the student a decided advantage when he enters upon the study of medicine.

FIRST YEAR

| | Course Number | HOURS | |
|---------------------------------|------------------|---------------|----------------|
| | | First Term | Second Term |
| ENGLISH | 102, 105, 106 | 2 | 2 |
| MATHEMATICS | 160 | | 3 |
| CHEMISTRY | 10, 11, 12, 13 | 7 | 7 |
| BIOLOGY | 1 | 6 | 6 |
| DRAWING | 31 | 1 | 1 |
| MEDICAL BOTANY | 5 | 1 | 1 |
| GERMAN, FRENCH OR SPANISH | 130, 120, 230 | 2 | 2 |
| RELIGION | 220 | 2 | 2 |
| PHYSICAL CULTURE | | 1 | 1 |

SECOND YEAR

| | Course Number | HOURS | |
|--------------------------------|------------------|---------------|----------------|
| | | First Term | Second Term |
| ENGLISH | 104, 106 | 2 | 2 |
| CHEMISTRY | 14, 15, 16, 17 | 7 | 7 |
| PHYSICS | 180, 181, 182 | 6 | 6 |
| ZOOLOGY | 2 | 6 | 6 |
| MEDICAL TERMINOLOGY | | 1 | 1 |
| HISTORY OF MEDICINE | | 1 | 1 |
| GERMAN, FRENCH OR SPANISH | 132, 121, 231 | 2 | 2 |
| RELIGION | | 2 | 2 |
| PHYSICAL CULTURE | | 1 | 1 |

Subjects of Instruction

BIOLOGY

1. **Natural History of Plant Groups.**—Structure of plants and function of the various organs. Study of phanerogams and cryptogams. Histology and physiology of plants.
2. **Zoology.**—Structure of leading types of animals; functions of organs; classification; economic relations; geographical distribution. Lectures, recitations, laboratory work, visits to museums.
3. **Human Anatomy and Physiology.**—Lectures, illustrated with charts, models, and lantern slides.
4. **The Nervous System and Its Terminal Organs.**—Lectures and illustrations, with charts, models and lantern slides.
5. **Medical Botany.**—Special study of medicinal plants.

CHEMISTRY

10. **General Inorganic Chemistry.**—Description of the non-metallic and metallic elements and their compounds. Lectures illustrated by experiments. Notebooks on the lectures required.

11. **Chemical Laboratory.**—Experiments covering a systematic study of the chemical and physical properties of the more important elements and their compounds.
12. **Qualitative Analysis.**—Description of a method of separation which experience has proved to be sufficiently simple and accurate.
13. **Laboratory Work.**—Separation of ordinary bases and acids. Medicus, Special Tests.
14. **Quantitative Analysis.**—A study of the methods of quantitative determinations.
15. **Laboratory Work.**—Quantitative determination of the constituents of familiar compounds and alloys.
16. **Organic Chemistry.**—Lectures on the hydrocarbons and their derivatives.
17. **Laboratory preparation and study of typical organic compounds.**
18. **Stoichiometry.**—Chemical problems and reactions and the application of such problems to analytical and industrial processes.
19. **Advanced Inorganic Chemistry.**—A thorough study of the elements and the more interesting and epoch-making discoveries and preparations.
20. **Assaying.**—Fire assays of gold, silver, lead and tin in ores and metallurgical products.

21. **Industrial Chemistry.**—Lectures on the chemical industries illustrated by experiments, lantern slides and specimens. The course is supplemented by regular visits to industrial plants.
22. **Industrial Analysis.**—Analysis of commercial products with methods of purification and testing.
23. **Physical Chemistry.**—Study of the relations of chemical theories and facts, with laboratory work in physico-chemical measurements.
24. **Electro-Chemistry.**—Principles of electro-chemistry and their application to chemical manufacture.
25. **Metallurgy of Iron and Steel.**—Study of the physical and chemical properties as well as the constitution and manufacture of cast iron, wrought iron and steel.

CIVIL ENGINEERING

30. **Freehand Lettering.**—Lettering adaptable to drawings. “Reinhardt’s system.”
31. **Projection Sketching.**—Freehand sketching of simple solids and of solids arranged in groups.
32. **Mechanical Drawing.**—Elementary work. Care and use of the instruments. Line shading. Geometrical problems. Conventional symbols.

33. **Descriptive Geometry.**—Projections. Problems of the point, line and plane. Single-curved, double-curved and warped surfaces. Intersections of surfaces. Shade and shadows. Isometric drawing. Perspective.
34. **Plane Surveying.**—Theory of plane surveying. Care and use of instruments. Farm and city surveying. Angular measurements. Adjustments of the level, transit and sextant. Computations of areas.
35. **Railroad Surveying.**—Organization of field parties. Staking out simple, compound and transition curves. Computations.
36. **Summer Survey.**—Topographical and hydrographical survey. Reconnaissance and preliminary survey. Location of about two miles of railroad. Determination of grades. Cross-sectioning. Profile work.
38. **Map Plotting.**—Plotting, from the student's field notes or from some equivalent data, a map of the summer survey.
39. **Railway Practice.**—Equipment, signals, signal supports and signal towers. Supports for electrification wires and apparatus. Maintenance of track and structures.
40. **Railway Engineering.**—Computation of earthwork, cut and fill. Location of a railroad by assumption. Estimates of quantities and costs.

41. **Railway Economics.**—General theory of railroad projects. Volume of travel, traffic and probable growth. Effect of alignment on resources and operating expenses. Records and properly prepared reports.
42. **Railway Design.**—Track, frogs, switches, and crossings. Slip-switches and sidings. Yards and Terminals.
43. **Geodesy.**—Geodetic surveying. Methods used. Use of instruments of precision. Measurements of base lines and angles.
44. **Topographical Drawing.**—Pen work. Brush work. Tinting. Conventional representations.
45. **Structural Drawing.**—Angles, channels, beams, columns and girders drawn to scale. Sections and beam connections.
46. **Materials of Construction.**—The physical properties
47. of materials used in structures.
48. **Mechanics of Materials.**—Strength, elasticity and
49. torsion of materials. Theory of flexure. Impact.
50. **Machine Sketching.**—Sketches made from full-sized parts of different machines. Finished drawings made to scale from sketches.
51. **Graphic Statics.**—Elementary work. Simple shear
52. and moment diagrams. Determination of stresses

by graphical methods. Application to roof trusses and bridges. Moment and shear diagrams.

53. **Stereotomy.**—Theory of stone-cutting. Actual models cut from plaster-paris in accordance with measurements taken from drawings.

56. **Hydraulics.**—Flow of water by orifices and weirs. Flow in pipes, canals and streams. Current meters. Water power. Pumps. Water-pipe systems. Resistance of water in a river or canal. Backflow. Hydraulic motors.

57. **Hydraulic Installation.**—Design of pipe line systems, waterworks and sewage disposal plants. Steel flumes and hydroelectric power. Conduits for cities.

58. **Water Supply and Irrigation.**—Drainage area, rainfall and evaporation. Consumption per capita. Distributing reservoirs. Purification of water. Reservoir construction and storage dams. Distributing and lateral canals. Estimates of cost.

59. **Sewers and Sewage Disposal.**—Reconnaissance location, dimensions, materials, construction, ventilation, study of existing sewers, estimate of cost, etc. Surface drainage, separate and combined systems, capacities of main and branches. Grade, flow and discharge of sewers. Methods of sewage disposal. Discharge into streams. Gravity and chemical precipitation. Filtration, various systems.

60. **Roads and Pavements.**—Grading of country roads. Staking out work. Draining and protection. Foundation and maintenance. City streets and pavements. Comparison of types. Machinery and tools. Specifications and contracts. Construction. Estimates of cost.

61. **Bridges and Buildings.**—Modern steel building construction. Roof trusses in wood and steel. Trestles and viaducts. Riveted lattice and pin-connected bridges. Comparison of types. Combination structures for elevated and subway construction. Cantilevers. Bascules. Machinery for operating movable bridges.

63. **Girder Design.**—The design of a steel plate girder. Turn-table. Computations. Details. Cost. Erection.

64. **Truss Design.**—Different loading. Position of load for maximum moment. Stress diagrams. Application to highway and railroad work. Specifications. Design of a simple bridge. Details.

65. **Steel Testing.**—The use of testing machines in the determination of the physical properties of materials. Proper form of reports.

66. **Cement Testing.**—Natural and Portland cements tested for relative merits. Laboratory work.

68. **Reinforced Concrete.**—Natural and Portland cement concrete reinforced with steel. Tested for relative

strength. The elastic theory and its application to beams, slabs and columns. Practical work and the examination of buildings under construction. Reports.

69. **Timber Structures.**—Pile bents. Trestle bents. Compound timber construction. Culverts. Estimates of cost. Field engineering.
70. **Tunneling and Excavating.**—Solid rock, ordinary earth and semi-liquid soil. Subaqueous tunnels. Timbering and lining. Subways. Open cut. Ventilation. Excavation by hand, steam and cable. Trench cutting. Hauling on roads or by cable. Dredging and dredging machinery. Estimates of cost.
71. **Masonry Construction and Foundations.**—Culverts, piers, arches and plain concrete structures. Economical considerations. Cofferdams, caissons, steel sheet-piles and pneumatic caissons. Estimates of cost.
72. **Masonry Design.**—The theories of earth pressure as applied to retaining walls. Design of a retaining wall. Design of an arch. Design of a dam investigated as an arch.
73. **Astronomy.**—Fundamental principles. Problems.
74. Use of data. Use of sextant, transit and zenith telescope in the determination of time, latitude and azimuth. Method of least squares.

75. **Engines and Boilers.**—Thermodynamics of the steam engine. Valve and link motion. Indicator diagrams. Steam pressure and study of various types of boilers. Hoisting machinery.
76. **Refrigeration.**—Study of the theory; practical application. Inspection of existing plants. The manufacture of ice as a commercial product. Machinery employed.
77. **Electricity.**—Theory and the uses of high power currents. Transmission and installation.
80. **Inspection Visits.**—Visits are made, at proper intervals, to work of interest and instruction, and to a few of the larger engineering plants.
81. **Thesis.**—The subject of the thesis must be of professional interest in the field of civil engineering.

ECONOMICS, SOCIAL AND POLITICAL SCIENCE

90. Study of the elementary principles of political economy. Practical economic problems; taxation, transportation, labor, finance, trusts and monopolies.
91. **Principles of Government**, legislation, the judiciary, the executive, suffrage, and finance.
92. **Public Expenditure.**—Sources of State income. Development, classification, incidents and effects of principal taxes.

93. **Principles of Sociology.**—Psychology of social types. Historical aspects of social organization, both ancient and modern. Study of modern social problems.

ENGLISH

102. **Composition and Rhetoric.**—A study of the laws of practical English composition. Emphasis is laid on the qualities of diction and on the structure of the sentence and the paragraph. Frequent short themes. Longer themes at intervals. Comments and criticisms.

103. **Argumentation and Debate.**—The preparation of briefs and forensics, and the public delivery of debates, both formal and extemporaneous.

104. **Composition.**—Weekly themes, descriptive, narrative, and expository; read and discussed in class; corrected by the instructor and returned with individual criticisms.

105. **History of English Literature.**—Rapid survey of the growth and development of English literature preparatory to an intensive study of special periods. Reading of representative masterpieces.

106. **History of American Literature.**—Study of the growth and special characteristics of American literature as an introduction to an intensive consideration of special periods.

107. **Composition.**—Themes on popular literary subjects assigned with special reference to the gathering and ordering of material.
108. **Literature of the Drama.**—Study of the origin and development of the English drama. Critical reading of Shakespeare's Hamlet or King Lear.
109. **English Literature of the Nineteenth Century.**—Study of the leading English authors of this period, and a critical reading of selected classics indicated in Brother Azarias' Books and Reading.
110. **Anglo-Saxon Literature.**—Study of the varying influencing agencies in Old English literature, and the growth and development of Old English thought down to Norman conquest. Critical reading of Beowulf.
111. **Poetics.**—Study of English verse structure. Exercise in scansion and verse making. Original poems.
112. **Philosophy of Literature and Style.**—An examination into the fundamental principles of literature and style.

FRENCH

120. **Intermediate.**—Review of grammar; practice in speaking and writing French.
Fraser and Squair, *French Grammar*.
Bazin, *Les Oberlé*; Dumas, *La Question d'Argent*;
Hugo, *Ruy Blas*; Chateaubriand, *Extraits*.

121. Advanced.—Practice in speaking and writing French.
Mansion, French Composition.
Lamartine, Méditations.
Coppée, Le Luthier de Crémone, Le Trésor.
Rostand, La Princesse Lointaine.

122. Seventeenth Century.—Prose and classic drama.
Bossuet, Choix de Sermons et d'Oraisons.
Corneille, Cinna, Le Cid.
Molière, Le Misanthrope.
La Fontaine, Fables.
Racine, Andromaque.

123. The History of French Literature.—The outlines of French literature. Lectures, assigned readings chiefly from authors of the eighteenth and nineteenth centuries.

GEOLOGY

125. Geology.—Dynamical, structural and historical geology. Lectures illustrated with lantern slides.

126. Descriptive and Determinative Mineralogy; Lectures and laboratory work.

GERMAN

130. Intermediate German.—German Syntax. German prose composition. Critical analysis of construction. Systematic drill in word composition, word derivation and the principles of syntax.

131. Anno 1870; *Der Bibliothekar*; *Das Urtheil des Paris*.
132. Advanced German.—*Soll und Haben*; *Maria Stuart*; *Minna von Barnhelm*, *Iphigenie auf Tauris*. Prose composition.
133. Advanced German.
Goethe, *Iphigenie*, *Herman und Dorothea*.
Schiller.
Lessing.
134. Scientific German.—Introduction to technical literature.
135. History of German Literature.

HISTORY

140. Ancient History.—History of Greece, with special reference to its literature, politics, and commerce.
141. Ancient History.—Rome, from the founding of the city to the fall of the Western Roman Empire, with special reference to literature, politics, and commerce.
142. Medieval History.—From the fall of the Western to the fall of the Eastern Roman Empire. The Holy Roman Empire and the Papacy receive special attention.

143. **The Renaissance**, the revival of learning, the political, economic and religious condition of Europe during the sixteenth century.
144. **The Religious Revolt of the Sixteenth Century in Germany**.—Economic and ecclesiastical conditions of the century; Luther and the revolt in Germany; wars of religion in France and Germany; the true Reformation.
145. **English History**.—Special attention to constitutional, economic and social history; the most important institutions of the Mediæval period.
146. **French History**.—From the establishment of the monarchy to the Revolution in 1789.
147. **Europe in the Nineteenth Century**.—The struggle for constitutional government and rights; Crimean War and Eastern question; Italian unification; the founding of the German Empire.
148. **American Political Institutions**.—Nature of State and National system; organization and powers of legislative, executive and judicial departments of Federal Government.
149. **Constitutional History of the United States**.—Colonial governments and development during the Colonial and the Revolutionary periods.
150. **Constitution Making**.—Federal and State; development of nationality and democracy; conflicts over “State Rights” and “Nationalism.”

151. **The Philosophy of History.**—based principally on the works of Balmes, Schlegel, and Allies.
152. **Church History.**—From the founding of the Church to the religious revolt of the sixteenth century, based on the works of Allies, Montalambert, Mann, Janssen, and Pastor.

MATHEMATICS

160. **Trigonometry.**—Plane and Spherical.
161. **Analytical Geometry.**—Plotting loci; the straight line, conics and simpler higher plane curves; general equation of the second degree.
162. **Solid Analytical Geometry.**—The straight line, plane, surfaces of revolution.
163. **Advanced Algebra.**—Binomial theorem; variables and limits; series; theory and properties of equations; solution of numerical equations. Slide Rule.
164. **Calculus.**—Differential and Integral, with applications to geometry, mechanics, engineering and physics.

ORATORY

170. **Study of the Principles of Elocution,** with weekly practice.
171. **Extempore Speaking.**—The aim of this course is to give the student readiness in speaking, with minimum of preparation, on questions of the day.

172. **Lectures on the Kinds and Divisions of Oratory,** the making and delivery of the oration. Study and analysis of typical British and American argumentative orations.
173. **Debating.**—Lectures on the principles of debating, preparation of material, and practical exercises in class.

PEDAGOGY

175. **Principles of Education.**—The educative process. The physical, mental, and moral laws upon which education is based. Aims and ideals of Catholic education. The teacher and his qualifications. School organization. hygiene and discipline. Aids to teaching.
176. **Methods in Teaching.**—Meaning of instruction and its relation to education. The psychologic and logical views of knowledge. The psychologic basis of method. Its general principles. The function of the recitation. The conduct of the recitation.
177. **History of Education (Ancient and Medieval).**—Chinese, Hindoos, Egyptians, Persians, Israelites, Greeks and Romans. Education during the Middle Ages: Monasticism, Scholasticism. The Crusades. Rise of universities. Noted educators.
178. **History of Education (Modern).**—The Renaissance; Humanism; the Reformation; Catholic education; history of education in the United States.

PHYSICS

180. Mechanics, Wave Motion, Sound, Heat.—Properties of matter; physical measurements; kinematics; gravitation; work and energy; friction; equilibrium; machines; elasticity; molecular phenomenon liquids; pressure in fluids; bodies immersed in liquids; density and specific gravity; fluids in motion; properties of gases; pressure of the atmosphere; instruments depending on the pressure of the air. Wave motion, water waves; propagation and reflection of waves; production and transmission of sound; physical basis of music; nature and effects of heat; transmission and radiation of heat; thermodynamics. Pre-requisite: High School Physics. First Term, three hours.

181. Electricity and Magnetism, Radioactivity and Light.—Magnets and magnetic fields; electro-statics; electric currents; electro-magnetism; electromagnetic induction; dynamoelectric machines; electric oscillations, and waves; passage of electricity through gases; Nature and propagation of light; light as wave motion; color; polarization; optical instruments. Prerequisite, Course 180. Second Term: Three hours.

182. Laboratory Course.—Designed to accompany Physics: 180—181. Two hours, both terms.

183. Advanced Electricity and Magnetism.—Prerequisites: 180—181—182. Must be preceded or accom-

panied by Analytical Geometry or Calculus. Both Terms, two hours.

184. **Laboratory Course in Electricity and Magnetism.** To be preceded by or accompany Physics, 183. Both terms, three hours.

185. **Analytical Mechanics.**—(a) Moments of forces; Centre of Gravity; Moments of Inertia. (b) Motion; Rectilinear, Curvilinear; Energy, Work, Power, Friction; Impact.
Sophomore Year—Second term, two hours.
Junior Year—First term, two hours.

186. **Elements of Electrical Engineering.**—Review of Principles of Electricity and Magnetism; Materials; Batteries; Commercial Instruments; Motors; Dynamos; Control and Protective Apparatus; Distribution and Transmission; Industrial Applications. Regular visits to power houses and study of machines, meters, wiring, etc.

PHILOSOPHY

200. **Formal Logic.**—The idea. Errors as to the nature of ideas in modern English and German philosophy. Definition. Division. The nature of judgment. The value of the syllogism.

201. **Method.**—General principles. Special methods. Deduction and induction. Methods of observation. Methods of explanation.

202. **Critical Logic.**—The possibility of certainty. Scepticism. Veracity of the senses and the intellect. Idealism *vs.* Realism. Universals. Authority and belief. Critical examinations of various theories of knowledge.
203. **Metaphysics.**—The Aristotelian Transcendentals. Reality of substances. Causation. Errors concerning causation. Final causes.
204. **Cosmic Philosophy.**—Nature, origin, and duration of the universe. Ultimate constituents of bodies. Theory of matter and form. Laws of nature. Possibility of miracles. The concepts of natural science and scholastic philosophy.
205. **Psychology.**—Rational *vs.* experimental psychology; value of each. Faculty, habit and action. The life principle. Vegetative life. Theory of sensation. Qualities of sensation. Intellection. Attention. Apperception. Association of ideas. Evolutionism. Heredity. Freedom of will. Spirituality and immortality of the soul.
206. **The Psychology of Education.**—A study of mental development. The psychological basis of education and of methods of teaching. Refutation of prevalent errors in educational psychology.
207. **Natural Theology.**—Proof of God's existence and providence; Deism, pantheism, agnosticism, atheism. Existence of evil. Preservation of creatures. Divine concurrence.

208. **General Ethics.**—Nature of a human act. Ultimate end of human actions. Determinants of morality. Does the end justify the means? Hindrances to the perfection of a human act. The passions, habit, virtue, vice.

209. **Special Ethics.**—Man's rights and duties as an individual. Man's duties to God—adoration, love, obedience. Man's duties to his neighbor as regards soul and body. Man's duties to himself as to soul and body. Suicide and duelling.
Man's rights and duties as citizen. The State. Its constituent elements. Its origin, end, scope, and limits.
Common law of nations. Peaceful relations among nations.
Ecclesiastical society. The Church. Its origin and constitution. Its ends and limits. Its superiority to the State. Its mission to the modern world.

210. **Experimental Psychology.**—Elements and general methods. Elements of mental life; sensation, feeling, conation. Experiments on the outer senses and on the association of ideas, with special application to pedagogy.

211. **History of Philosophy.**—Principles of the great founders of ancient schools; their vitality as illustrated in modern views. History of medieval philosophy. History of modern philosophy. The Neo-Scholastic movement.

RELIGION

CHRISTIAN DOCTRINE

220. **Dogma.**—Explanation of the principal dogmas, with special insistence on the continuity of the Church. The Church and science. Objections.
Christian Brothers, *Manual of Christian Doctrine*.

221. **Moral.**—Explanations of the fundamental principles of Christian morality as contained in the decalogue.
Christian Brothers, *Manual of Christian Doctrine*.

222. **Worship.**—Grace, prayer, and the sacraments, with special reference to the Council of Trent and the tenets of Protestantism.
Christian Brothers, *Manual of Christian Doctrine*.

223. **Apologetics.**—Nature and necessity of revelation. Its criteria. Modern objections.

SPANISH

230. **Elementary.**—Grammar, reading, composition. Alarcón, *El Capitán Veneno*; Valera, *El Pájaro Verde*.

231. **Intermediate.**—Reading, conversation, composition.
Spanish Composition; Cervantes, *Don Quixote*; Pereda, *Pedro Sánchez*; Moratín, *El Sí de las Niñas*.

232. **Advanced.**—Composition, conversation. Calderón, *El Príncipe Constante*; *La Vida es Sueño*; Lope de Vega, *La Estrella de Sevilla*.

LA SALLE COLLEGE HIGH SCHOOL DEPARTMENT

The aim of the High School Department is to prepare for entrance to the college. The studies conform to the requirements of the College Entrance Examination Board.

The requirements for admission to the High School Department are preliminary studies prescribed by the Council of Universities and Colleges. The most favorable time for entrance is at the beginning of the scholastic year.

The classes are frequently examined, and the students are not allowed to pass from one subject to another until they have given evidence of adequate knowledge of the subject. A student who shows by the results of the examinations that he is unable to keep up with his class will be placed in a lower grade.

Summarized reports of the examinations are sent to the parents at the end of each semester. Since each report shows the exact standing of the student, it should be carefully examined by his parent or guardian. The November and April tests are not to be entered on students' records, nor to figure in their general averages. The report of these tests will, however, be sent to parents. The January and June examinations are to cover the matter for the entire preceding term.

Cards indicating the weekly record are distributed each week by the Inspector, who comments upon them before the professors and students of the class.

Promotions are based on the joint results of the examinations and the daily marks. A student must receive a credit of four units before he will be promoted to the next higher class. Seventy per cent. is the passing mark in every subject in the High School Department.

At least three hours a day should be given to the preparation of class work.

The active co-operation of parents with the faculty is essential to the progress of the student. Parents are, therefore, requested to insist upon regular attendance and careful preparation of class work.

A written excuse from parent or guardian is required in all cases of absence. This excuse will not be accepted in lieu of omitted class work.

A student of La Salle High School who has made sixteen units in his studies, divided as shown below will be allowed to graduate from the High School and will be granted his certificate of graduation. He may enter the College with a credit of fifteen units.

OBLIGATORY UNITS IN HIGH SCHOOL.

| | |
|--|-----|
| English including Elocution | 3.0 |
| Modern Languages { 2 in one { 1 in another } | 3.0 |
| Mathematics, 1.5 must be made in III H. & IV H. ... | 3.0 |
| History { I H. + II H. + III H. = 1. { IV H. = .4 } | 1.4 |
| Science | 2.5 |
| Other subjects | 3.1 |

COURSE OF STUDY

The figures in parentheses indicate the number of periods per week. A period lasts for 55 minutes. Drawing and Laboratory periods last 120 minutes each.

FIRST YEAR

English. (4), Hanson, Two Years' Course in English Composition; Irving, Sketch Book; Parkman, Oregon Trail; Stevenson, Treasure Island; Macaulay, Lays of Ancient Rome.

History. (2½), Ancient, General History, Eastern Nations, Greece and Rome.

Algebra. (5), Wells' First Course.

German. (5), Bacon, Elements of Grammar; Bacon, Vorwaerts.

Science. General (4).

Drawing. (1), Mechanical.

Elocution. (1).

Christian Doctrine. (2½), Christian Brothers' Series, No. 4.

Physical Training. (1).

SECOND YEAR

English. (3), Hanson, Two Years' Course in English Composition; Goldsmith, the Deserted Village; Eliot, Silas Marner; Shakespeare, Merchant of Venice; Bunyan, Pilgrim's Progress.

Plane Geometry. (4).

History. (2½), General History, Medieval and Modern.
French. (3), Fraser and Squair, Shorter French Course; Guerber, *Contes et Legendes*.

German. (4), Bacon, Elements of Grammar; Guerber, *Rosa von Tannenburg*; *Neujahrslied*, *Die Taube*; Super, German Reader.

Science.

Biology, (3).

Laboratory, (1).

Drawing. (1), Mechanical.

Elocution. (1).

Christian Doctrine. (2½), Christian Brothers' Series No. 3.

Physical Training. (1).

THIRD YEAR

English. (3), Gardiner, Kittredge and Arnold, Manual of Composition and Rhetoric; The Sir Roger de Coverly Papers; Shakespeare, *Henry V*; Dickens, *A Tale of Two Cities*; Tennyson, Gareth and Lynette, Lancelot and Elaine, and *The Passing of Arthur*.

History. (2), English.

Elocution. (1).

Solid Geometry (First Term), (4).

Intermediate Algebra (Second Term), (4).

German. (4), Bacon, Grammer; Storm; Immensee; Heyse, *L'Arrabiata*; Moser, *Der Bibliothekar*; Bluetgen, *Das Peterle von Nuernberg*.

French. (3), Fraser and Squair, Shorter French Course; Daudet, *Neuf Contes Choisis*; Labiche et Martin, *La Poudre aux Yeux*; Mairet, *La Rache du Petit Pierre*.

Drawing. (1), C. B. Method, Book I, Projections.
Science.

Physics, (3).

Laboratory, (1).

Christian Doctrine. (2½), Christian Brothers' Series
No. 4.

Physical Training. (1).

FOURTH YEAR

English. (3), Gardiner, Kittredge and Arnold, Manual of Composition and Rhetoric; Burke, Speech on Conciliation with America; Milton, L'Allegro, Il Penseroso, Comus; Macaulay, Life of Johnson; Shakespeare, Macbeth.

Trigonometry. (4), Plane and Spherical Trigonometry.

French. (3), Fraser and Squair, Shorter French Course; Enault, Le Chien du Capitaine; Labiche, La Grammaire; Sareey, Le Siege de Paris; Racine, Esther.

German. (3), Bacon, Grammar; Prose Composition; Schiller, Der Onkel als Neffe; Grolle, Inkognito; Albersdorf, Cand. phil. Lauschmann; Arnold, Fritz auf Ferien.

History. (2), American History and Civil Government.
Science.

Chemistry, (3).

Laboratory, (1).

Christian Doctrine. (2½), Christian Brothers' Series
No. 4.

Elocution. (1).

Physical Training. (1).

Drawing. (1).

LA SALLE COLLEGE SCHOOL OF COMMERCE

Students who desire to prepare for mercantile life will find every facility in the Commercial Department. This department does not limit itself to purely business branches. Subjects of general culture are also included.

English composition and letter writing receive special attention. The student is required to treat prescribed subjects in a manner that will enable him to write with ease and elegance. Questions relating to political economy and commercial law are discussed in the class room in order to give the students correct ideas on the vital questions of daily life. Weekly lessons are given in the art of public speaking, in order that the student may acquire an easy and graceful delivery.

The mathematics taught include a complete course of commercial arithmetic and an elementary course of mensuration.

This department aims to train its students for the position of private secretary. Shorthand, so essential to secretarial service, is given special attention.

In addition to shorthand, a course in STENOTYPY, the "Machine Way" in Shorthand, is offered, thus giving the student the best possible training with an opportunity to take the cream of stenographic positions.

The course in bookkeeping is designed to prepare students for higher accounting. The thorough foundation received by the students enables them to pursue their studies for the professional field of Expert Accounting.

This department is equipped with the latest model typewriters, adding machine and duplicating machines, thus affording ample opportunity in the use of up-to-date office equipments.

The rules governing the School of Commerce are similar to those of the High School.

Besides the regular Commercial Course of two years, we have extended this department to a Three Years' Evening Course. Here the students will have an opportunity to continue their studies, thus combining study with daily actual office experience to secure greater efficiency. This course will assist ambitious young men in securing rapid advancement, besides qualifying them for the State Examination for the certificate of "Certified Public Accountant."

GENERAL COURSE

FIRST YEAR

English.—Hanson, Two Years' Course in English Composition; Irving, Sketch Book; Parkman, Oregon Trail; Stevenson, Treasure Island; Macaulay, Lays of Ancient Rome.

Business Correspondence.—Essentials of mechanical arrangement, principles of letter writing, practice in general correspondence, postal regulations.

Civics.—State civics, Federal service.

Business Law. I.—The law and principles of contracts, negotiable instruments, agency, partnerships, corporations, and the sale and transfer of real and personal

property, and the discussion of forms and problems thereunder.

Commercial Geography.

Shorthand.—Pitman.

Stenotypy.

Typewriting.—Mechanism and care, touch method, duplicating, carbon work.

Bookkeeping.—Twentieth Century System.

Commercial Arithmetic.

Elocution.

Religion.—Christian Brothers' Series No. 4.

Physical Culture.

SECOND YEAR

English.—Hanson, Two Years' Course in English Composition; Goldsmith, The Deserted Village; Eliot, Silas Marner; Shakespeare, Merchant of Venice; Bunyan, Pilgrim's Progress.

Business Correspondence.—Mercantile, professional, form and social letters, telegrams and cablegrams, postal information. Writing letters from oral dictation and shorthand notes. Special emphasis placed on modern arrangement, attractive presentation, emphasis and force, brevity, clearness, tone and originality.

Business Law. 2.—Advanced Business Law. Partnership articles; rights and liabilities of partners; special and limited partnerships; formation, management, and dissolution, merger and consolidation of corporations; rights and liabilities of stockholders, directors and officers. Practical problems.

Shorthand.—Pitman.

Stenotypy.

Typewriting.—Transcription of shorthand notes, speed practice, stencil work, legal forms.

Office Methods.—Filing, indexing, tabulating, duplicating processes, etc.

Advanced Business Arithmetic.—Proportion, alligation, practical measurements, rapid and accurate calculation in the four rules, interest and discount.

Public Speaking.

Religion.—Christian Brothers' Series No. 4.

Advanced Bookkeeping.—Special columns, voucher systems, single to double entry, capital stock, bonds, loose leaf and card system.

Physical Culture.**Evening Classes**

Send for special syllabus E.

SCHOLARSHIPS

The Henry T. Coleman Scholarship, founded by the late Henry T. Coleman, Esq., in 1903.

The William F. Harrity Scholarship, founded by the late Hon. William F. Harrity, in 1913.

The Patrick Curran Scholarship, founded in 1914 by the Rev. E. J. Curran, A. M., in memory of his father.

MEDALS AND PRIZES

COLLEGE

1. The Ryan purse of \$50 is offered by James J. Ryan, G.C.S.G., to the student of the Senior Class who has the best record of scholarship in the regular work of the year.
2. The Archbishop medal for Oratory, the gift of the Most Rev. Edmond F. Prendergast, D.D., is open to all college students.
3. The Harrity memorial medal for Religious Instruction, founded by Mrs. William F. Harrity, in memory of her husband, Mr. William F. Harrity, is open to all college students.
4. The Anastasia McNichol medal for English Essay, founded by Hon. James P. McNichol, is open to all college students.
5. A prize of \$25. is awarded by the Catholic Philanthropic Institute to that student of the Senior or Junior year, who shall at the close of the year pass the best examination in English Literature of the Nineteenth Century.

HIGH SCHOOL

1. A prize of \$25 is offered by the Rt. Rev. P. R. McDevitt, D.D., to the student of the High School Department who has made the best record for the four years' course.
2. The medal for Elocution, donated by Rt. Rev. John J. McCort, D.D., is contested for by the students of the High School Department.

THE LA SALLE COLLEGE ALUMNI ASSOCIATION

The alumni association has been organized to foster among its members a spirit of loyalty to their Alma Mater and to hold them together by a common bond of fellowship.

Regular meetings and reunions are held from time to time as prescribed in the rules and by-laws of the society.

The officers of the society were elected at the last regular meeting as follows:

PRESIDENT, Francis J. Maneely, Esq.

FIRST VICE-PRESIDENT, Rt. Rev. P. R. McDevitt, D. D.

SECOND VICE-PRESIDENT, Dr. Albert Strecker.

SECRETARY, Dr. John G. Wurtz.

TREASURER, Aloysius L. Fitzpatrick.

HISTORIAN, Rev. Edward J. Curran, A. M.

LEAGUE OF THE SACRED HEART

SPIRITUAL DIRECTOR, Rev. Edward J. Curran, A. M.

PRESIDENT, Emil A. Scherr.

VICE-PRESIDENT, Martin J. Whalen.

TREASURER, Francis G. Reuss.

SECRETARY, Maurice B. McGoldrick.

LA SALLE COLLEGE ATHLETIC ASSOCIATION

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| GENERAL COMMITTEE | <table border="0" style="width: 100%;"> <tr> <td style="width: 10%;">ALUMNI,</td><td>Martin J. Powers, William J. McNichol, Joseph E. O'Loughlin.</td></tr> <tr> <td>FACULTY,</td><td>Brother Richard, Brother G. Lewis.</td></tr> <tr> <td>STUDENT,</td><td>Daniel McNichol, Chas. Toner.</td></tr> </table> | ALUMNI, | Martin J. Powers, William J. McNichol, Joseph E. O'Loughlin. | FACULTY, | Brother Richard, Brother G. Lewis. | STUDENT, | Daniel McNichol, Chas. Toner. |
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| OFFICERS | PRESIDENT, Robt. Morrissey. VICE-PRESIDENT, Francis Reuss. SECRETARY, John Perry. TREASURER, Emil Scherr. |
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FORM OF BEQUEST TO LA SALLE COLLEGE

In the hope that friends of Christian Education may remember the needs of the College, the following form of bequest is appended:—

I give and bequeath to La Salle College in the City of Philadelphia

..... *Dollars,*
to be appropriated by the Trustees for the benefit of the College in
such manner as they will consider most useful.

